



# RESEARCH HIGHLIGHT

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January 2006



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Technical Series 06-101

## GREEN PHOENIX INTEGRATED DESIGN CHARRETTE FOR SUSTAINABLE AFFORDABLE HOUSING

On January 27-29, 2005, Parkdale Liberty Economic Development Corporation (PLEDC) organized and held a two-and-a-half-day design charrette for a sustainable, affordable housing project. Canada Mortgage and Housing Corporation (CMHC), the City of Toronto's Energy Efficiency Office, Natural Resources Canada (NRCan) and Sustainable Buildings Canada (SBC) provided organizational assistance for the charrette. CMHC, the City of Toronto, Enbridge Gas Distribution and NRCan provided financial assistance. Human Resources and Skills Development Canada (HRSDC) supported the wages of PLEDC staff who managed logistics for the charrette.

The goal of the charrette was to produce designs to add about 20 new, green, affordable rental units (known as the "Green Phoenix Project") to a site that already supports two existing buildings, at the corner of King Street and Dunn Avenue in the west end of Toronto. The largest building on the site is the 11-storey Phoenix Place, which provides bachelor apartments for low-income people. The building also houses the sanctuary for the Parkdale United Church, as well as church offices and facilities. Shalom House, next door to Phoenix Place, is a century-old house that was purchased by the church in the 1970s, serves as office and meeting space for community and faith-based organizations and houses a food bank.

The charrette attracted more than 40 participants, including architects, engineers, planners, housing workers, building operators, community and church representatives and a variety of "green" technology specialists. The charrette will be part of a film describing the development of the Green Phoenix project.

This design charrette was organized as the first stage of an "integrated design process" (IDP) to create more environmentally friendly and energy-efficient designs for the new apartments. In the integrated design process, a team of building professionals begins their collaboration

### Phoenix Place

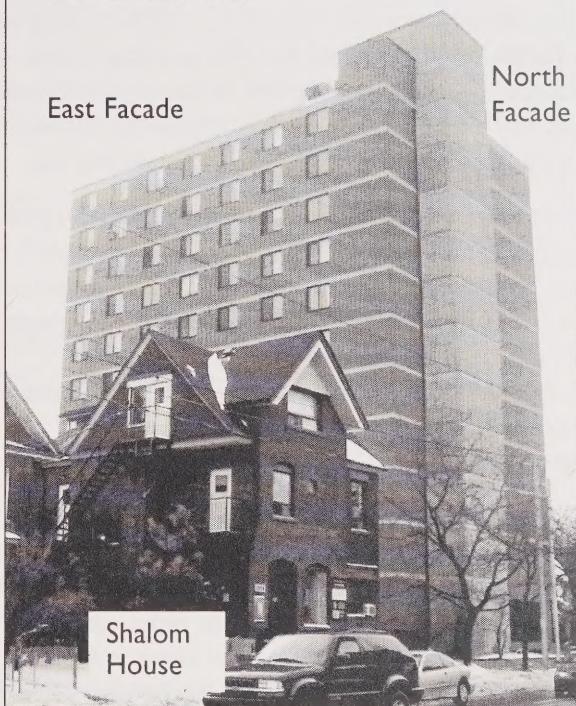


Figure 1: Phoenix Place and Shalom House

in the initial design stages, rather than working in isolation. This challenges them to consider new strategies, systems and products that more appropriately support a sustainable design scheme. An integrated team formed early at the concept stage can maximize the potential benefits as design concepts can change easily as new ideas are considered.



An integrated team includes members with diverse expertise and experience to inform the process, including property managers, energy simulators, costing experts, energy-efficiency experts, envelope specialists, municipal engineers, planners, alternative energy specialists, building owners and residents. These team members work together to achieve a higher performance, value-added building. This multi-disciplinary relationship should continue throughout the design and construction phases.

The Green Phoenix project has four main goals:

- a. **To provide 20 or more new affordable apartments to serve low income people** in the Parkdale area of Toronto. The project will become a part of Phoenix Place, which already provides 136 low-cost bachelor apartments in Parkdale. It is expected that the new apartments will be provided by retrofitting Shalom House, an old mansion that currently houses the offices of several community organizations, and by new construction on the site.
- b. **To create an environmental showcase.** The goal of the project is to achieve the LEED Gold Standard for the new construction. The retrofit work will be done using the LEED-Existing Building guidelines, and will integrate wherever possible energy efficiency and other environmental improvements to the existing 11-story apartment building on the site.
- c. **To demonstrate that green building is not an unrealistic luxury** for those planning and developing affordable housing for low-income people. Green Buildings can be achieved for costs similar to those paid for conventional construction, and can result in lower operating costs that help to keep the housing more affordable over the long run.
- d. **To incorporate community members and potential tenants in some aspects of the project construction.**

Charrette planning included intensive work on the following

- **Choosing dates and a place for the event**
- **Developing an agenda**
- **Making arrangements for energy modelling** with the support of NRCan, Enbridge and Sustainable Buildings Canada
- **Inviting participants to the event.** The organizers used the CMHC charrette guideline to identify the kinds of professionals needed to fulfill the charrette goals.
- **Organizing three design teams** that included architects, engineers, sustainable development planners, community and church representatives, the Phoenix Place building manager, representatives of companies that provide green building products and services, affordable housing providers, city planning staff and others.
- **Arranging for skilled facilitators for the design teams**
- **Developing a package of background materials for the participants**
- **Arranging for charrette supplies, food, note-takers, etc.**

### **The Economic Goals and Challenges**

- i) To keep the construction costs of this project within the \$2.4 million budget proposed to the Supporting Communities Partnership Initiative (SCPI). This is important for keeping the rents down and the housing affordable.
- ii) To reduce the operating costs for the existing buildings on site (Phoenix Place and Shalom House)

### **The Environmental Goals and Challenges**

- i) To aim for the LEED Gold Standard
- ii) To renovate Shalom House, the three-storey building on site, to include six or seven apartments and to meet the requirements of LEED certification for existing buildings
- iii) To develop this project in a way that provides opportunities to reduce the environmental footprint of the existing 11-storey building. This building is heated with electric baseboards, as were many affordable and co-op housing projects built in the 1970s, and the cost of electricity is climbing, putting pressure on operating costs. The building also has a brick south facade and the apartments on the west side suffer from blistering heat in the summer sun.

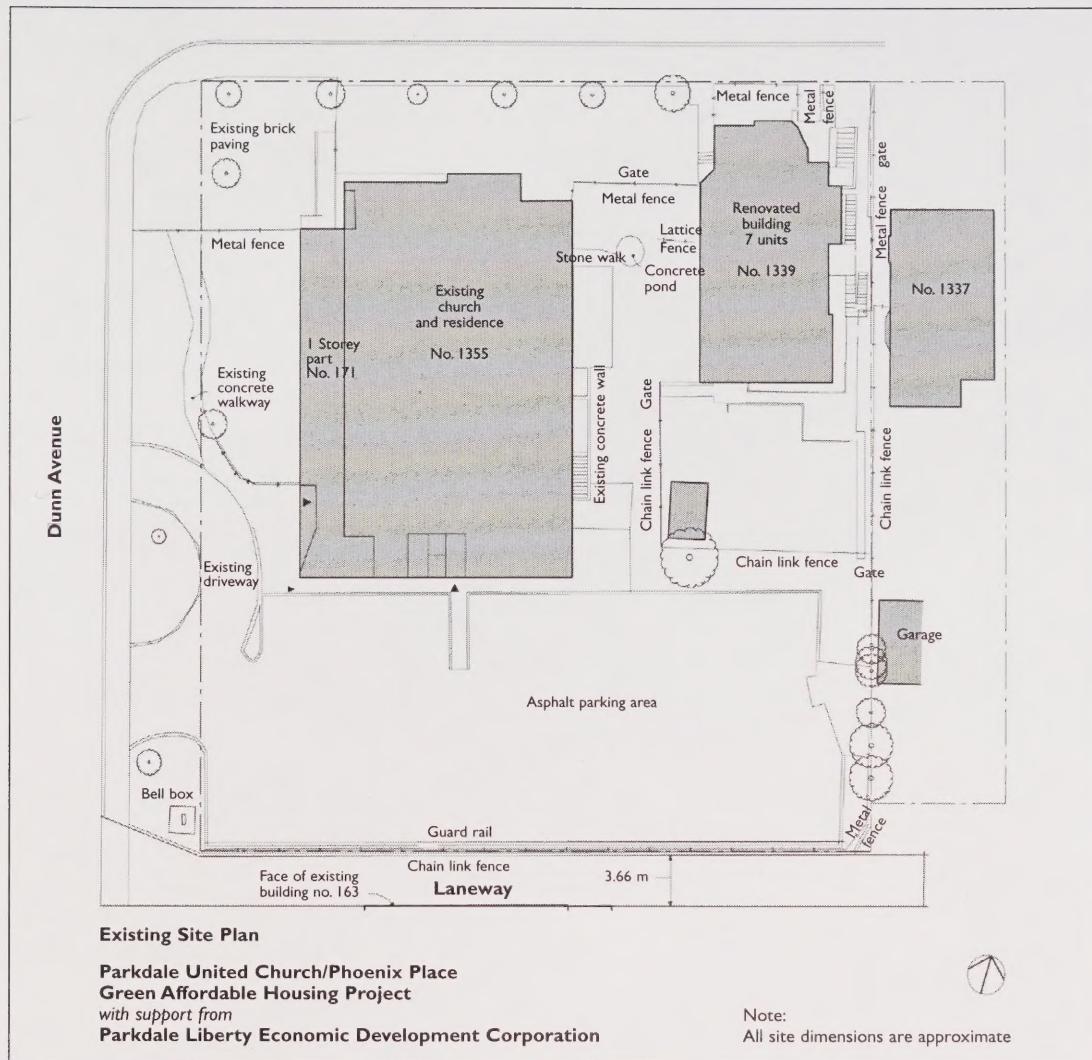


Figure 2: Existing Site Plan

Other social, city planning and construction challenges were also presented to the charrette participants. All three teams produced concepts which modified the existing tower and introduced green features which could reduce the utilities consumption of the building. The final proposal that was presented to the City for approval and to SCPI for funding, added 21 units to the site. It included a low section wrapping the north end of Phoenix Place that presented a more “friendly” face on King Street and possible location for a café, laundry and other non-profit enterprises that could serve the residents. Other concepts included a solar water system on the south facade, a greenhouse and composting system for organics, a green roof, relocation of the problematic garbage chute in a later phase, higher levels of insulation on the new construction, a solar wall to preheat the tower air supply, central heat recovery ventilation, in-slab heating and cooling of the new construction, geothermal heat supply, combining the heating of the tower and Shalom House. A waste management plan was also proposed that included recycling

or reuse of materials such as asphalt, electric baseboards, wood flooring and seeking salvaged kitchens from the Regent Park project demolitions. Ground rules and communications plans for tenant recycling were also proposed. Energy modelling of the proposed solutions indicated that they would meet and exceed NRCan’s Commercial Building Incentive Program requirements for extra funding.

The expectation is to obtain a City permit for the project in the spring of 2006. More information can be found at the PLEDC website at [www.greenphoenix.ca](http://www.greenphoenix.ca)

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### **Housing Research at CMHC**

Under Part IX of the *National Housing Act*, the Government of Canada provides funds to CMHC to conduct research into the social, economic and technical aspects of housing and related fields, and to undertake the publishing and distribution of the results of this research.

This fact sheet is one of a series intended to inform you of the nature and scope of CMHC's research.

To find more *Research Highlights* plus a wide variety of information products, visit our website at

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Printed in Canada  
Produced by CMHC

08-11-05

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